

## CLAIMS

What is claimed is:

1. A flowable materials container comprising:  
a body of a cyclic olefin containing polymer or a bridged polycyclic olefin  
containing polymer, the body defining a chamber to contain flowable materials, the  
chamber having an opening;  
an elastomeric component attached to the body and providing a seal of the  
chamber; and  
wherein the body when filled with 1 ml of water suitable for injection and sealed  
with the elastomeric component and stored for 3 months generates less than 4 ppm of  
chlorides in the water.
2. The container of claim 1 wherein the body is a syringe body.
3. The container of claim 2 wherein the elastomeric component is a plunger seal.
4. The container of claim 1 wherein the elastomeric component is a synthetic  
rubber.
5. The container of claim 4 wherein the synthetic rubber is selected from the  
group consisting of styrene-butadiene copolymers, acrylonitrile-butadiene copolymers,  
neoprenes, butyl rubbers, polysulfide elastomers, urethane rubbers, stereo rubbers,  
ethylene-propylene elastomers.
6. The container of claim 5 wherein the synthetic rubber has halogen  
substitutents.
7. The container of claim 6 wherein the synthetic rubber is a halogenated butyl  
rubber.
8. The container of claim 7 wherein the synthetic rubber is a chlorobutyl-based  
elastomer.

Country	Year	Population (millions)	Urban population (millions)	Urban population (%)	Population density (per sq km)	Urban population density (per sq km)	Population growth rate (%)	Urban population growth rate (%)	Population growth rate (%)	Urban population growth rate (%)
Algeria	1980	10.0	4.0	40.0	100	400	1.5	2.5	1.5	2.5
Algeria	1985	10.5	4.5	42.9	105	450	1.5	2.5	1.5	2.5
Algeria	1990	11.0	5.0	45.5	110	500	1.5	2.5	1.5	2.5
Algeria	1995	11.5	5.5	47.8	115	550	1.5	2.5	1.5	2.5
Algeria	2000	12.0	6.0	50.0	120	600	1.5	2.5	1.5	2.5
Algeria	2005	12.5	6.5	52.0	125	650	1.5	2.5	1.5	2.5
Algeria	2010	13.0	7.0	53.8	130	700	1.5	2.5	1.5	2.5
Algeria	2015	13.5	7.5	55.6	135	750	1.5	2.5	1.5	2.5
Algeria	2020	14.0	8.0	57.1	140	800	1.5	2.5	1.5	2.5
Algeria	2025	14.5	8.5	58.6	145	850	1.5	2.5	1.5	2.5
Algeria	2030	15.0	9.0	60.0	150	900	1.5	2.5	1.5	2.5
Algeria	2035	15.5	9.5	61.3	155	950	1.5	2.5	1.5	2.5
Algeria	2040	16.0	10.0	62.5	160	1000	1.5	2.5	1.5	2.5
Algeria	2045	16.5	10.5	63.6	165	1050	1.5	2.5	1.5	2.5
Algeria	2050	17.0	11.0	64.7	170	1100	1.5	2.5	1.5	2.5
Algeria	2055	17.5	11.5	65.7	175	1150	1.5	2.5	1.5	2.5
Algeria	2060	18.0	12.0	66.7	180	1200	1.5	2.5	1.5	2.5
Algeria	2065	18.5	12.5	67.6	185	1250	1.5	2.5	1.5	2.5
Algeria	2070	19.0	13.0	68.4	190	1300	1.5	2.5	1.5	2.5
Algeria	2075	19.5	13.5	69.2	195	1350	1.5	2.5	1.5	2.5
Algeria	2080	20.0	14.0	70.0	200	1400	1.5	2.5	1.5	2.5
Algeria	2085	20.5	14.5	70.7	205	1450	1.5	2.5	1.5	2.5
Algeria	2090	21.0	15.0	71.4	210	1500	1.5	2.5	1.5	2.5
Algeria	2095	21.5	15.5	72.1	215	1550	1.5	2.5	1.5	2.5
Algeria	2100	22.0	16.0	72.7	220	1600	1.5	2.5	1.5	2.5
Algeria	2105	22.5	16.5	73.3	225	1650	1.5	2.5	1.5	2.5
Algeria	2110	23.0	17.0	73.9	230	1700	1.5	2.5	1.5	2.5
Algeria	2115	23.5	17.5	74.5	235	1750	1.5	2.5	1.5	2.5
Algeria	2120	24.0	18.0	75.0	240	1800	1.5	2.5	1.5	2.5
Algeria	2125	24.5	18.5	75.5	245	1850	1.5	2.5	1.5	2.5
Algeria	2130	25.0	19.0	76.0	250	1900	1.5	2.5	1.5	2.5
Algeria	2135	25.5	19.5	76.5	255	1950	1.5	2.5	1.5	2.5
Algeria	2140	26.0	20.0	76.9	260	2000	1.5	2.5	1.5	2.5
Algeria	2145	26.5	20.5	77.3	265	2050	1.5	2.5	1.5	2.5
Algeria	2150	27.0	21.0	77.8	270	2100	1.5	2.5	1.5	2.5
Algeria	2155	27.5	21.5	78.2	275	2150	1.5	2.5	1.5	2

9. A flowable materials container comprising:  
a body of a homopolymer, copolymer or terpolymer of norbornene, the body defining a chamber to contain flowable materials, the chamber having an opening; and  
an elastomeric component providing a seal of the opening and the component  
5 being a butyl rubber.
10. The container of claim 9 wherein the body is a homopolymer of norbornene.
11. The container of claim 9 wherein the body is a copolymer of norbornene.
- 10 12. The container of claim 11 wherein the copolymer of norbornene has a comonomer selected from the group consisting of  $\alpha$ -olefins having from 2-10 carbons, aromatic hydrocarbons, cyclic olefins and bridged polycyclic olefins.
- 15 13. The container of claim 12 wherein the comonomer is ethylene.
14. The container of claim 9 wherein the butyl rubber is halogenated.
15. The container of claim 14 wherein the component is a chlorobutyl elastomer.
- 20 16. The container of claim 15 wherein the component is essentially latex free.
17. The container of claim 15 wherein the component is 100% latex free.
- 25 18. A syringe comprising:  
a syringe body of a norbornene and ethylene copolymer, the body defining a chamber for containing water and having an opening; and  
a plunger seal of a halobutyl based elastomer sealing the opening.
- 30 19. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

20. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

21. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

22. A syringe comprising:

a syringe body of a norbornene and ethylene copolymer, the body defining a chamber for containing water and having an opening;

a plunger seal of a halobutyl based elastomer sealing the opening; and

wherein the syringe meets all requirements of the United States Pharmacopoeia for sterile water for injection.

23. A sterile water for injection syringe comprising:

a syringe body of a norbornene and ethylene copolymer, the body defining a chamber containing water and having an opening;

a plunger seal of a halobutyl based elastomer forming a fluid tight seal of the opening; and

wherein the syringe meets all requirements of the United States Pharmacopoeia for sterile water for injection.

24. The syringe of claim 23 wherein the plunger seal is a chlorobutyl based elastomer.

25. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

26. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

27. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

28. The syringe of claim 24 wherein the norbornene and ethylene copolymer is capable of being sterilized in an autoclave at 121°C.

29. A method for filling a syringe comprising the steps of:

5 providing a syringe body of a norbornene and ethylene copolymer and having an opening;

sterilizing the syringe body to define a sterilized syringe body;

transferring the sterilized syringe body to a sterile environment while maintaining the sterility of the sterilized syringe body;

10 filling the sterilized syringe body with an appropriate quantity of sterile water for injection;

sealing the opening with an elastomeric component of a halobutyl based elastomer to define a sterile water for injection syringe; and

15 wherein the sterile water for injection syringe meets the requirements of the United States Pharmacopoeia for sterile water for injection.

30. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

20 31. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

32. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

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33. The method of claim 32 wherein the halobutyl based elastomer is a chlorobutyl-based elastomer.

34. The method of claim 29 wherein the transferring step comprises the step of:

30 transferring the sterilized syringe body from a sterilizing station to the sterile environment wherein the sterilized syringe body is exposed to a sterile ambient atmosphere.

35. A method for filling a syringe comprising the steps of:
- providing a syringe body of a norbornene and ethylene copolymer and having an opening;
  - sterilizing the syringe body to define a sterilized syringe body;
  - 5 transferring the sterilized syringe body to a sterile environment while maintaining the sterility of the sterilized syringe body;
  - immediately filling the sterilized syringe body with an appropriate quantity of sterile water for injection;
  - sealing the opening with an elastomeric component of a halobutyl-based elastomer
  - 10 to define a sterile water for injection syringe; and
  - wherein the sterile water for injection syringe meets the requirements of the United States Pharmacopoeia for sterile water for injection.
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